

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(100 M) \$100 CHILD C

(43) International Publication Date 8 January 2004 (08.01.2004)

PCT

(10) International Publication Number WO 2004/004421 A3

(51) International Patent Classification⁷: 27/00

H01L 51/20,

(21) International Application Number:

PCT/IB2003/002905

(22) International Filing Date:

19 June 2003 (19.06.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 102 28 939.5

28 June 2002 (28.06.2002) DE

- (71) Applicant (for DE only): PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH [DE/DE]; Steindamm 94, 20099 Hamburg (DE).
- (71) Applicant (for all designated States except DE, LC, LK, LR, LS, LT, LU, LV, MA, MC, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SZ, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BECHTEL, Helmut [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). BUSSELT, Wolfgang [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). BOERNER, Herbert, Friedrich [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr.

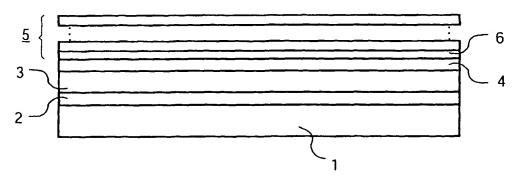
- 2, 52066 Aachen (DE). BERTRAM, Dietrich [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).
- (74) Agent: MEYER, Michael; Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- (88) Date of publication of the international search report: 19 August 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTROLUMINESCENT DEVICE WITH A TRANSPARENT CATHODE



(57) Abstract: The invention relates to an electroluminescent device with a transparent cathode. Said electroluminescent device comprises a substrate (1) and, adjacent to said substrate (1), a laminated body composed of a first electrode (2), an electroluminescent layer (3) and a second metallic electrode (4). Said second electrode (4) is covered with transparent dielectric layers (5), which increase the transmission of light through the second metallic electrode (4) and serve as filters.

INTERNATIONAL SEARCH REPORT

in....tional Application No PCT/IB 03/02905

A.	CLA	SSIFICATION	OF SUBJECT	MATTER .
II	PC	7 H011	51/20	H01L27/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) $IPC \ 7 \quad H01L \quad G02B \quad H05B$

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 1 076 368 A (EASTMAN KODAK CO) 14 February 2001 (2001-02-14) column 4, line 40 - column 5, line 41 figure 3	1,2
Υ	EP 1 119 221 A (IDEMITSU KOSAN CO) 25 July 2001 (2001-07-25) page 4, line 16 - line 21 page 11, line 36 - line 45	1,2
Α	US 6 366 017 B1 (ANTONIADIS HOMER ET AL) 2 April 2002 (2002-04-02) column 3, line 36 - line 58 column 4, line 34 - line 47	1-3
	-/	

X Further documents are listed in the continuation of box C.	χ Patent family members are listed in annex.
 Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed 	 "T" later document published after the international filing date or priority date and not in conflict with the application but clied to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family
Date of the actual completion of the International search 28 May 2004 Name and mailing address of the ISA	Date of mailing of the international search report 07/06/2004 Authorized officer
Number and Halling address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	De Laere, A

INTERNATIONAL SEARCH REPORT

lional Application No
PCT/IB 03/02905

C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	FCI/IB 03/02905
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 13, 30 November 1999 (1999-11-30) -& JP 11 224783 A (TOYOTA CENTRAL RES & DEV LAB INC), 17 August 1999 (1999-08-17) abstract; figure 3	1-3
A	CHEN S-F ET AL SOCIETY FOR INFORMATION DISPLAY: "DESIGN ISSUES IN USING THIN-FILM OPTICAL INTERFERENCE FILTERS AS COLOR FILTERS FOR LCD SYSTEM APPLICATIONS" SID INTERNATIONAL SYMPOSIUM DIGEST OF TECHNICAL PAPERS. SAN JOSE, JUNE 14 - 16, 1994, SANTA ANA, SID, US, vol. Vol. 25, 14 June 1994 (1994-06-14), pages 411-416, XP000462725 the whole document	1-3
A	JP 50 020683 A (HITACHI LTD) 5 March 1975 (1975-03-05) the whole document	1-3

INTERNATIONAL SEARCH REPORT

donal Application No				
PCT/IB 03/02905				

			1017 10 03/ 02903		
Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 1076368	A 	14-02-2001	EP JP	1076368 A2 2001052878 A	14-02-2001 23-02-2001
EP 1119221	A	25-07-2001	JP JP EP EP DE DE US	10162959 A 10294182 A 1119221 A2 1119222 A2 69723538 D1 69727987 D1 0845924 A2 6284393 B1	19-06-1998 04-11-1998 25-07-2001 25-07-2001 21-08-2003 08-04-2004 03-06-1998 04-09-2001
US 6366017	B1	02-04-2002	NONE		~
JP 11224783	Α	17-08-1999	NONE		
JP 50020683	Α	05-03-1975	NONE		

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 8 January 2004 (08.01.2004)

PCT

(10) International Publication Number WO 2004/004421 A3

(51) International Patent Classification⁷: 27/00

H01L 51/20,

(21) International Application Number:

PCT/IB2003/002905

- (22) International Filing Date: 19 June 2003 (19.06.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 102 28 939.5

28 June 2002 (28.06.2002) DE

- (71) Applicant (for DE only): PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH [DE/DE]; Steindamm 94, 20099 Hamburg (DE).
- (71) Applicant (for all designated States except DE, US):
 KONINKLIJKE PHILIPS ELECTRONICS N.V.
 [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven
 (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BECHTEL, Helmut [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). BUSSELT, Wolfgang [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). BOERNER, Herbert, Friedrich [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE). BERTRAM, Dietrich [DE/DE]; c/o Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).

- (74) Agent: MEYER, Michael; Philips Intellectual Property & Standards GmbH, Weisshausstr. 2, 52066 Aachen (DE).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- (88) Date of publication of the international search report: 19 August 2004
- (48) Date of publication of this corrected version:

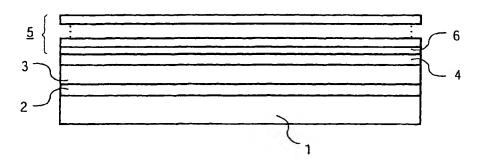
4 November 2004

(15) Information about Correction:

see PCT Gazette No. 45/2004 of 4 November 2004, Section II

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: ELECTROLUMINESCENT DEVICE WITH A TRANSPARENT CATHODE



(57) Abstract: The invention relates to an electroluminescent device with a transparent cathode. Said electroluminescent device comprises a substrate (1) and, adjacent to said substrate (1), a laminated body composed of a first electrode (2), an electroluminescent layer (3) and a second metallic electrode (4). Said second electrode (4) is covered with transparent dielectric layers (5), which increase the transmission of light through the second metallic electrode (4) and serve as filters.



